



28<sup>th</sup> International Scientific Conference  
**Strategic Management**  
 and Decision Support Systems  
 in Strategic Management  
**SM2023**

Subotica (Serbia), 18-19 May, 2023

**Alexandra-Mădălina Țăran**

West University of Timisoara, Department of  
 Finance, Doctoral School of Economics and  
 Business Administration,  
 Timisoara, Romania

alexandra.taran@e-uvt.ro

**Oana-Ramona Lobont**

West University of Timisoara, Department of  
 Finance,  
 Timisoara, Romania

oana.lobont@e-uvt.ro

**Magda-Mihaela Luca**

"Victor Babeș" University of Medicine and  
 Pharmacy, Department of Pediatric Dentistry,  
 Timisoara, Romania

luca.magda@umft.ro

## **WORLDWIDE TRENDS IN THE SCIENTIFIC PRODUCTION ON THE RELATIONSHIP BETWEEN PUBLIC GOVERNANCE AND HEALTH SYSTEMS IN THE CONTEXT OF POST COVID-19 PANDEMIC**

**Abstract:** The research conducted within this paper is set to identify worldwide scientific trends and assess the overall production of the relationship between public governance and health systems. The methodological credentials are based on scientometric analysis, implying the "R-bibliometrix" package, using the bibliometrix R-Tool to visualise the existing knowledge networks and to measure the quality and quantity of the selected and included documents. Moreover, we applied the main features of R-bibliometrix, namely annual scientific production, specific research themes and documents trends, sources, and authors, with a keen focus on the clustering technique. The bibliographic data were selected and retrieved through the Web of Science Core Collection database (WoS), resulting in a final sample of 313 relevant articles published during the lapse of time between 2018-2022. Results indicate two major areas of countries' networks, respectively collaboration and production networks, with a significant level of interaction between countries worldwide and close groups of knowledge at the European Union level, along with the highest level of scientific author production between different countries around the world. Moreover, the results suggest that the governance of health systems is a solid field of research and the most important themes identified are related to the specific subject of financing the health system, especially during and after the COVID-19 pandemic, implying the need for adequate regulations and effective public policies to further sustain public health. Moreover, the results reveal that many authors and international institutions express a greater interest in the public governance of health systems. Ultimately, the all-embracing impact of research trends regarding the relationship between public governance and health systems is beneficial, our results leading to an upsizing of future research assistance by providing a worldwide framework related to the governance of health systems within the EU.

**Keywords:** public governance, COVID-19, health systems, R-bibliometrix, knowledge networks

### **1. INTRODUCTION**

In the past decade, many policy areas have developed a series of collaborative mechanisms. Public government positions the health and well-being of citizens as key drivers of a prosperous society and an expanded and vibrant economy. On the other hand, public governance of health systems is characterised by various actors involved (e.g., ministers, ministries of health, health agencies, and others) because they play a key role in shaping policies to promote public health and the welfare of citizens. The way people live and the context in which they create health in their daily lives require a new approach to health governance. In the contemporary context induced by the Covid-19 pandemic,

digitisation's impact on health dimensions is evident, as effective national responses are needed to strengthen health systems at the European level and significantly reduce the gaps between EU member states (Țăran et al., 2022). Therefore, health should be considered an essential pillar in all policies and various intersectoral actions because most health indicators are found in multiple sectors other than health.

The approach to governance of health systems has a feature that varies over time depending on the changing nature of the various challenges and risks facing society. WHO indicates that governance should be disseminated on several levels, such as i) state actors (ministry, parliament, others); ii) society (citizens, foundations, enterprises, global media, others); iii) actors at the supranational level (European Union, respectively United Nations). Thus, there is a need for a complex approach to reviewing the literature on the impact of public governance on health systems.

Based on these underpinnings, the general objective of our research was to draw out a scientific framework regarding the incidence of public governance in the health system. Moreover, the analysed period covered the years 2018–2022. Consequently, 313 references were selected from the Web of Science Core Collection (WoS) database. In order to identify the research framework, the analysis measures the quantity and quality of publications by employing an R tool, namely the R-Bibliometrix package pointed out a detailed analysis that explores a wide range of indicators and features, using the R Shiny application, developed in R.

The novelty and complexity of our research are defined by the fact that we consider document reviews of the most valuable research from institutions and researchers in the European Union area. Furthermore, our article provides a practical exploration of the main trends regarding the incidence of public governance in health systems and a comprehensive analysis for practitioners, researchers, and academics to grasp the future challenges of public governance regarding public health during some critical situations.

The paper consists of five sections. Section 2 presents a detailed and relevant literature underpinning. Section 3 presents the methodology and provides the bibliographic data. Section 4 includes the main results, while Section 5 presents the conclusions.

## 2. LITERATURE REVIEW

In recent years, it has been clearly emphasised that the quality of a nation's governance is directly correlated with its economic output, with higher levels of policy and credibility/effectiveness of public institutions and public authorities producing a positive and robust impact on economic output (Dima et al., 2013). The incidence of public governance in the health system has been debated over recent years in the literature. These explorations aimed to endorse a new theoretical framework regarding the relationship between governance and public health, especially health systems.

Many authors argued that exists many methodological approaches and tools of scientometric and bibliometric analyses through which we can determine the most relevant research trends regarding many topics by employing several essential features and different studies in terms of the most relevant authors, prolific countries, significant affiliations and institutions, conceptual structures, intellectual networks, and world collaboration trends that can significantly contribute to the existing literature through the new integrative and comprehensive framework on several research topics (Rodriguez-Soler et al., 2020; Lobonț et al., 2020; Ravslej et al., 2022; Lobonț et al., 2021).

Based on the fact that medical care is a fundamental human right, public governance has the role of ensuring rules and coordinating institutions that facilitate access to medical care and provide benefits for society. In this light, Bertonecello et al. (2015) explored the perceptions among Italian residents regarding the need for training and the governance model that can define the competence framework for good governance through a questionnaire. The results reveal that resident doctors feel a greater need that is inclined towards better training, especially the need to define the framework of competencies (role and responsibility) to achieve the measures that lead to the ideal of good governance of the health systems.

Marks et al. (2010) highlighted different perspectives regarding public health governance through a thematic analysis. Furthermore, it was considered that public health governance is characterised by several transition points, along with administrative and governance changes. The results emphasise that a different approach to governance, but also the various commitments regarding governance can significantly influence health outcomes, potentially having an impact on a series of characteristics involved in governance, respectively: strategies, public health practices, and implicitly management regimes regarding performance.

Nonetheless, the reform of health systems and the structures that govern public health must be aligned on the same trajectory as most practices. Lipauga et al. (2019) conducted a study that facilitates an understanding of different emerging structural governance models. The main findings highlight tools developed to reform the institutional mechanism regarding the governance of public hospitals.

On this frame of reference and multiple challenges, many authors state that public governance and health promotion have a multifaced role in health systems (Helgensen, 2014). Furthermore, Carlson et al. (2015) underscored, among other things, the existence of six functions of public health governance, respectively: public policies that must be developed, a health department that must be kept under continuous supervision, the need for resource management, continuous improvements, involved partners, and legal authority.

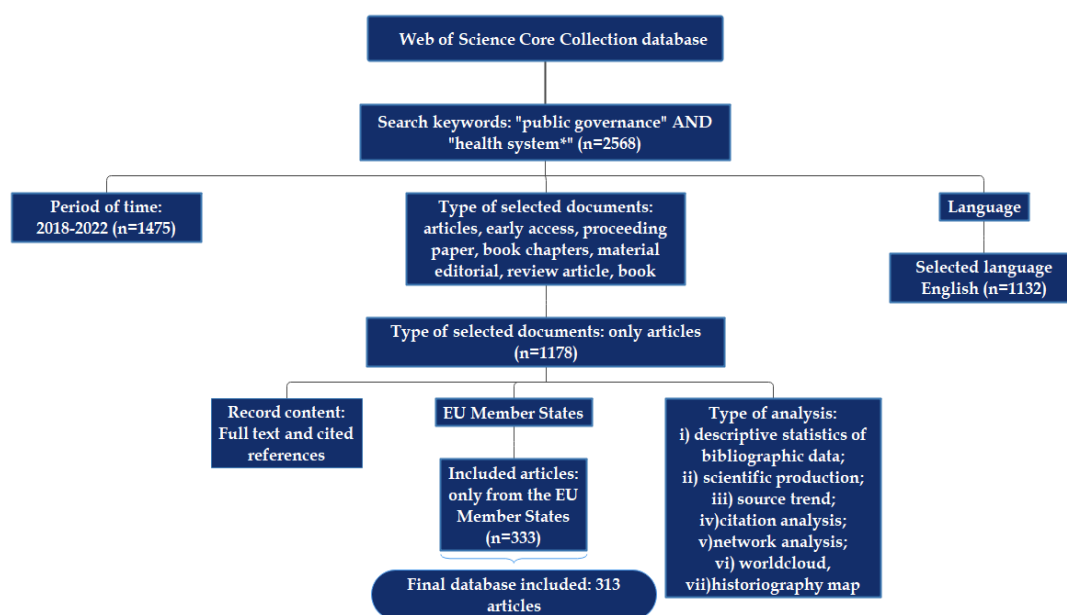
Withal, Yang et al. (2022) investigated the complex impact of the COVID-19 pandemic on public health governance. The authors applied different types of analyses, such as co-cited references, co-occurrence networks, and the citation of

documents. The results highlighted the research directions, clear lines for future research, research trends, prolific countries, and core sources.

### 3. METHODS AND MATERIALS

#### 3.1. Data and sample construction

The dataset comprising the documents included in the scientometric research was obtained by consulting the Web of Science (WoS) Core Collection database. WoS provides a comprehensive set of documents, with efficient instruments and filters, starting from inclusion and exclusion criteria to specific features that allow the selection of the relevant documents and up to information on the analysed results (specific fields of WoS regarding the included records through Treemap chart, bar chart, or table visualisation). From the variety of features, characteristics, and instruments provided by the Web of Science (WoS), we took an interest in and extracted only the relevant documents regarding the incidence of public policy on health systems by applying different criteria of inclusion and exclusion (Figure 1), as well as the treemap field from WoS.



**Figure 1:** The multi-phase process of determining the final sample of documents  
Source: Authors' own process in Edrawmind software

Bibliometric data regarding the incidence of public governance in health systems were extracted from the Web of Science (WoS) Core Collection database. Consequently, the Web of Science database was selected as the most relevant database that meets the requirements of the bibliometric analysis related to the relationship between public governance and health systems. In order to capture all relevant documents, the search query included a series of keywords related to our research topic, identifying public governance and health systems as the most used terms after an extensive analysis of the literature on existing bibliometric studies. Furthermore, public governance and the health system are considered the key terms of the analysis because they contain initiatives aimed at modernising and integrating high-quality public governance into public health systems.

The data collection process comprises two steps. Although, this stage can involve creating its own databases (Waltman, 2016). First, the bibliographic data regarding the incidence of public governance on health systems was derived from a popular comprehensive academic database – Web of Science Core Collection. WoS Core Collection covers many records and peer-reviewed journals. Secondly, to yield the number of records in the research field, the search terms were: “public governance” AND “health system\*”, which produced 2568 documents between 2018 and 2022. Therefore, filters restrict the research to only documents written in English, which ensures replicability and the international audience of the papers chosen in the analysis process between the period 2018 and 2022. After the screening process, the eligibility criteria were performed by manually examining the documents. Thus, 313 articles have been identified on the Web of Science as relevant for our bibliometric analysis regarding the incidence of public governance in health systems.

After all relevant bibliometric data regarding the incidence of public governance on health systems were extracted from the Web of Science (WoS), various approaches and tools were applied. Regarding the descriptive presentation, the Shiny app allows for obtaining descriptive statistics (Aria et al., 2017; Munoz et al., 2020).

Data visualisation includes intuitive visualisations and maps representing various visualisation analysis methods, namely intellectual structures, social networks, dendrograms, thematic evolutions, and bi-dimensional maps that allow the extraction, visualisation, and mapping of valuable features from the set of analysed documents. In order to identify the different measures of the networks or to measure the overlap of the distinct clusters, the network analysis allows performing statistical analysis on the generated maps, dendrograms, and networks. By employing visualisation techniques, the Shiny app enables the representation of scientific maps and the results of different types of analysis. Furthermore, we developed a detailed presentation on frequency analysis, scientific production examination, and mapping networks of the most prolific countries, core sources, and significant authors. Withal, the analysis of the network, the collaboration of the authors and the simultaneous appearance of the keywords, the analysis of the thematic evolution, including the mapping of the keywords and the thematic trends, and the strategic diagram were performed with the Biblioshiny package, respectively Shiny app. In addition, through a combination consisting of text mining and machine learning methods for predictive modelling in R, the dynamic change in the appearance of terms was analysed.

### 3.2. Methodology

As regards the scientometric approach, the methodology used consisted in applying different features of a method of science mapping, namely the Shiny app, which was laid on 313 documents.

R package, namely Bibliometrix, represents an integrative tool for comprehensive science mapping analysis that appraises the linkages, collaboration, networks, intellectual structures, thematic evolutions, and social structures. Bibliometrix scientific maps are configured through general formulas.

The data analysis comprises two essential parts: descriptive analysis and network extraction. Descriptive analysis of bibliographic data includes more information about the dataset: main information about data, document types and contents, authors, and their collaboration. Furthermore, to extract networks, different types of approaches have been developed:

- a) “Bibliographic coupling”: exists when at least one cited source appears in the bibliography or reference list of the two documents. The general formula for a bibliographic coupling network:

$$\text{Bib}_{\text{coup}} = A \times A' \quad (2)$$

where:

- $A$  = document x cited reference matrix

The number of bibliographic couplings that exists between “i” and “j” is indicated by  $b_{ij}$  and the strength of the bibliographic coupling is represented by the number of common references to documents. Also,  $\text{Bib}_{\text{coup}}$  represents a symmetrical and non-negative matrix:  $\text{Bib}_{\text{coup}} = \text{Bib}'_{\text{coup}}$ .

- b) “Co-word analysis”: by collecting keywords, abstracts, or titles in a bibliographic collection, maps and clusters of terms can be formed. The general formula for the co-word network:

$$\text{Bib}_{\text{cword}} = A' \times A \quad (3)$$

where:

- $A$  = document x word matrix (terms from title or abstract, authors’ keywords, keywords plus)

The number of co-occurrences that exists between “i” and “j” is indicated by  $b_{ij}$ . The diagonal elements represent the number of documents containing the word.

- c) “Collaboration analysis”: is represented by a scientific collaboration network. The nodes refer to authors, and the links refer to co-authorships. The general formula for collaboration network:

$$\text{Bib}_{\text{coll}} = A' \times A \quad (4)$$

where:

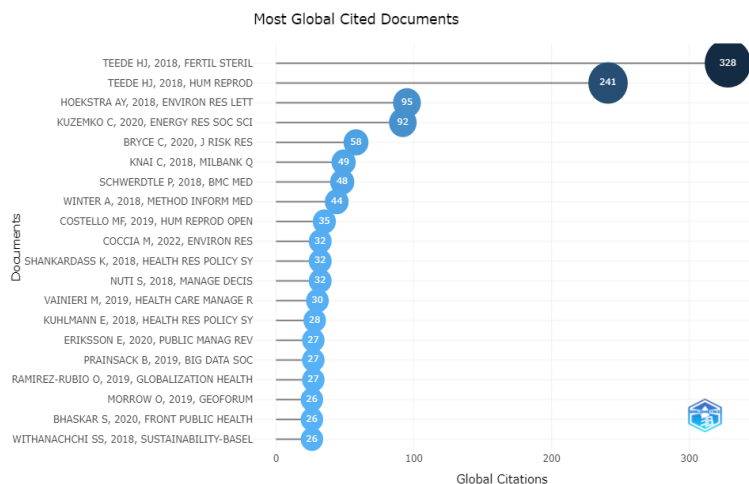
- $A$  = document x author matrix

The number of existing collaborations between authors is indicated by  $b_{ij}$ . The diagonal element represents the number associated with the documents that are authored or co-authored by the researchers.

## 4. RESULTS

The starting point in the bibliometric analysis focused on the most cited documents over the last 5 years of analysis, respectively 2018-2022, Figure 2 lists the top 20 most cited documents in descending order. The most relevant documents observed individually during the analysed period are the following: in the first year (2018), the most cited articles belong to the author Tedee, with a total of 328 citations received for the first document in the top, respectively 241 citations for the second document. In the second year analysed, namely 2020, we identify authors such as Kuzemko, with the most cited document on emergency measures taken by states, companies, and individuals in response to the COVID-19 pandemic, results that led to a series of political, and economic and social changes, with 92 citations. In the third year of analysis, respectively, 2021, the analysis does not identify any document in the top 20 most cited documents. Furthermore, for 2022, the most relevant document comes from author Coccia, a scientific study

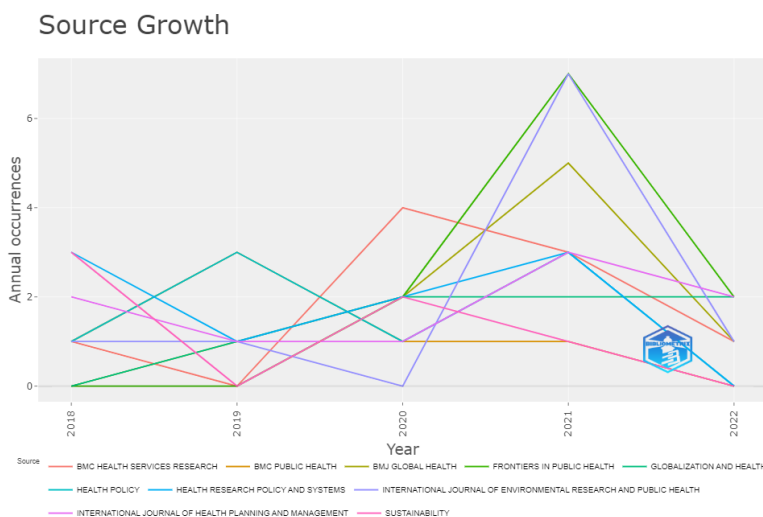
whose results suggest that the best-performing countries, which have faced the pandemic crisis of COVID-19, have outstanding public governance, associated with a high level of health expenditures regarding the health system, with a total of 32 citations. Moreover, this analysis presents indices that can help policymakers or public institutions to develop effective strategies to improve countries' preparedness and prevention for future pandemic threats or other health challenges that can arise over time (Coccia et al., 2022).



**Figure 2:** Most relevant documents regarding the number of citations  
**Source:** Authors' computation through R software, Bibliometrix package, Shiny app

Moreover, focusing on the scientific production regarding the incidence of public governance in health systems, the most relevant sources, authors, and countries were identified based on published articles and citations over the period 2018-2022. Due to many different countries, specific sources and significant authors involved in the research field of the incidence of public governance on health systems, the presentation focuses on the most cited countries and sources, respectively the most cited authors.

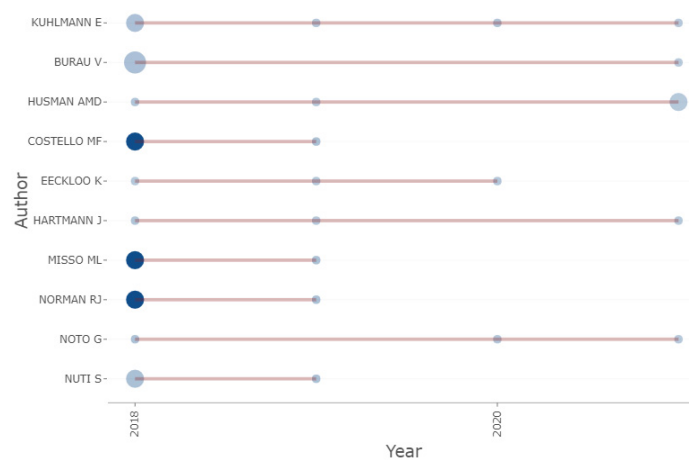
The ranking of the core sources, the evolution and growth over time and the network of co-citation of sources is also a subject of interest. Furthermore, regarding the level of sources, the results of the most productive sources are highlighted in Figure 3. Also, a higher production level of an item in at least one of the years was used to determine the ranking. Thus, ten sources were analysed, and, in some cases, several scientific journals were ranked at the same production level. Furthermore, in terms of the productivity of the core sources, the level has changed considerably from year to year in the period 2018-2022. Accordingly, the number of certain sources increased significantly in the recently analysed period compared to the beginning period of the studied interval.



**Figure 3:** The evolution and dynamics of sources regarding the number of annual occurrences  
**Source:** Authors' computation through R software, Bibliometrix package, Shiny app

Regarding specific scientific sources, the Journal of Frontiers in Public Health has the most annual publications in the analysed period (with 11 annual publications), followed by the “International Journal of Environmental Research and Public Health” with a total of 10 annual appearances. If each year is considered separately, six journals had more than nine annual appearances during the analysed period, and their annual occurrence accounted for more than half of the annual appearances throughout the period analysed. Also, “BMC Health Services Research”, “BMJ Global Health”,

“Health Research Policy and Systems”, and “International Journal of Health Planning and Management” on the third position in the ranking of annual appearances, all three journals having a number of 9 annual occurrences. In the context of source growth analysis, the journals "Frontiers in Public Health", "BMJ Global Health", and "International Journal of Environmental Research and Public Health" appeared in the first positions, being the most active sources in the last 3 years analysed, their annual appearances increasing significantly, being also the most core sources in the total ranking. The trend highlights an acceleration in the research field regarding the incidence of public governance in health systems, but also a significant number of appearances of the most relevant articles regarding the incidence of public governance in the health system, with a higher volume of annual appearances in the last 3 years analysed (2020-2022). Thus, the evolution of the ten most significant and prolific sources can be divided into three main categories: (i) sources that had a low average of annual occurrences but subsequently registered a significant increase and began to have a significant number of annual occurrences in the last three years analysed (2020-2022) and which continued to increase during this analysed period, with the highest number of occurrences; (ii) sources with a notable initial level of annual occurrence during the analysed period, but which significantly reduced their occurrence in the last 3 years analysed and showed significant intervals of inactivity; (iii) sources that started with a relatively low number of annual appearance, followed by upward developments and a remarkable and continuous level of annual appearances.

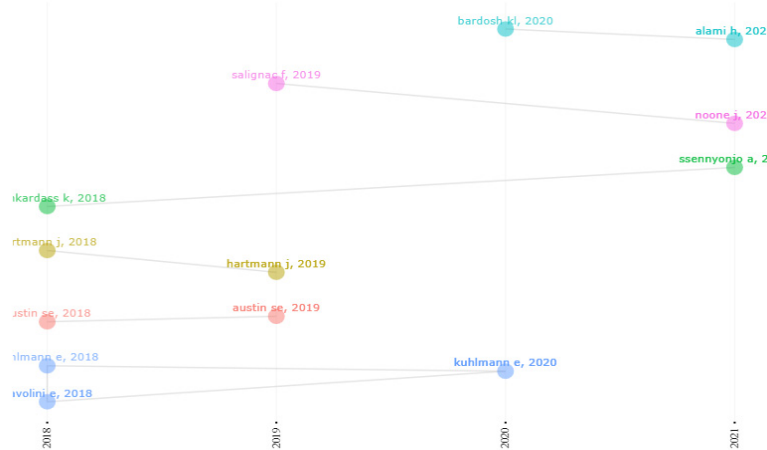


**Figure 4:** Authors' production during 2018-2020

**Source:** Authors' computation through R software, Bibliometrix package, Shiny app

In terms of authors' production over time, as shown in Figure 4, Viola Burau and Costello Michael have the most extended history of researching the relationship between public governance and health systems. Although their periods of activity were similar, the author Burau obtained 3 documents, and the author Costello got 2 documents, both in the top ranking of the most productive authors. Burau Viola and Michael Costello are the authors with the most remarkable works with a number of 49 and 569 citations, respectively, the authors which propose different methods of analysis and also studies proposing the introduction of a rapid benchmarking tool based on integrated multilevel governance. These studies also pointed out that the governance of health systems, especially contemporary public services in industrialised countries, is usually based on a combination of different models of governance, noting that the governance of health systems and health professions are essential pillars of public health. The literature related to governance has raised the issue of specific coexistence between different governance models. The focus is on various crises and impacts, while less attention is on situations where different governance models do not connect. Moreover, the authors also point out that the gaps in the coexistence of different models of government can be considered as disconnections in the management of public services, even health care services, reflecting a lack of government capacity to connect different models of governance with each other. Withal, the growth of international collaborations of countries worldwide and the country of the correspondence author made us consider the map of scientific collaborations.





**Figure 7:** Historiographic representation of references  
**Source:** Authors' computation through R software, Bibliometrix package, Shiny app

Additionally, in Figure 7, based on direct citations, intellectual connections are drawn in chronological order; each historical path represents a research topic and its central documents. In this sense, six research pathways are identified, being presented in different colours; each path represents a concept and its historical development. Further, the results evidence that the first route highlights the importance of integrating the social sciences in the preparation and response to the COVID-19 pandemic, namely a strategic framework for capacity building and improving global health security, as well as issues related to preparing health systems for a future pandemic. The second route emphasises the measurement of dynamic collaborations on collaborative tools for health assessment and the way collaboration practices can be supported in a new era of public governance. Route three discusses how social science theories can influence intra-government coordination efforts. Route four presents articles discussing risk governance. Route five refers to studies of intra-governmental relations on health adaptation to climate change. Furthermore, the last route, respectively route six, emphasises the importance of health governance.

## 5. CONCLUSIONS

This research brings significant contributions to the existing knowledge that is currently evolving in the field regarding the incidence of public governance in health systems by providing new insights and methodological and integrative approaches through different features of scientific mapping.

Therefore, given that recent years have led to a significant increase in the number of publications in the field of research, this method allows us to add value to the existing literature and to expose a comprehensive and in-depth examination of research on the incidence of public governance on health systems in the last five year allowing the examination of the evolution of research over time.

The methodological approach implies a broad range of different features and indicators in order to allow us to measure the quantity and quality of documents, the results providing a critical path of both national and international contributions to the existing literature regarding the incidence of public governance on health systems, by employing R-Bibliometrix package, namely Shiny app.

In this context, the general objective of our research was to build a framework for the research on the incidence of public governance in the health system by employing an R-tool, Bibliometrix, including the different features of the Shiny app, over the last five years. Assessing this objective, both for qualitative and quantitative measurement, involves in-depth approaches, taking into account different analyses of scientific mappings, such as the examination of descriptive indicators, including the most important documents and affiliations; identification of the most important countries and journals; observation of impact authors; examining collaboration between authors and highly significant research points; identification of currently used research topics, taking into account the dynamic change in the importance of the keywords used about the relationship between public governance and health systems.

Thus, after applying the scientific mapping technique to the bibliographic data, based on various bibliometric indicators, we found the most significant authors, sources, and prolific countries regarding the articles that discuss the incidence of public governance in health systems.

Moreover, The World Health Organization, OECD, European Commission, World Bank, Hood C., Pollitt C., Christensen T, Provan KG., and Buse K. are among the authors/institutions with the most extended history in researching the incidence of public governance on health systems. Furthermore, another scientific visualisation in terms of sources revealed substantial impacts of "Frontiers in Public Health", "International Journal of Environmental Research and Public Health", "BMC Health Services Research", and "BMJ Global Health", which are also considered core journals, being at the top in terms of the number of publications. Withal, when the scientific map of the most



prolific countries and their collaboration was applied, we found that worldwide, the results reveal collaborations between Australia, Canada, USA, China, South Africa and the European continent (United Kingdom, Romania, Denmark, Sweden, Ireland, Netherlands, Spain, France), and a significant degree of collaboration between certain countries from European Union. Finally, the authors' collaborations are highlighted in chronological order by different associations depending on the year of publication through a historiographical scientific map.

We emphasise that our research provides a schematic and visual framework of research regarding the incidence of public governance in the health system for researchers and practitioners. The research contributes integrative research and additional evidence regarding the incidence of public governance in health systems. Nevertheless, the research represents a guideline of recommendations and orientations for the scientific and academic community regarding the current research trends and can be considered as a support for the decision to choose the appropriate journal for the publication of scientific documents.

In future research direction, we propose an in-depth approach regarding not only the incidence of public governance on the health system but also to extend the terms used initially in the search for the most relevant document in WoS by adding the concept of the COVID-19 pandemic.

Our research presents limitations, mainly induced by the timespan chosen and the included bibliographic data. Therefore, selecting only one database, respectively Web of Science (WoS), can lead to a significant amount of bibliographic data being excluded, such as Pub Med, Scopus, and others. Other studies also mentioned these limitations, for example, Kalita et al. (2015), Yang and Qi (2022), and Bouchard et al. (2015). Furthermore, we intend to expand the analysis by also introducing the COVID-19 pandemic along with public governance to observe their incidence on health systems, as Yang and Qi (2022).

## REFERENCES

- Aria, M., & Cuccurullo, C. (2017). bibliometrix: An R-tool for comprehensive science mapping analysis. *Journal of Informetrics*, 11(4), 959-975. DOI: <https://doi.org/10.1016/j.joi.2017.08.007>
- Bertoncello, C., Buja, A., Silenzi, A., Specchia, M. L., Franchino, G., Lazzari, A., Baldo, V., Ricciardi, W., & Damiani, G. (2015). Good governance competencies in public health to train public health physicians. *International Journal of Public Health*, 60(6), 737-749. DOI: <https://doi.org/10.1007/s00038-015-0702-y>
- Bouchard L, Albertini M, Batista R, & de Montigny J. (2015). Research on health inequalities: A bibliometric analysis (1966-2014). *Social Scienc and Medicine*, 141, 100-108. DOI: <http://doi.org/10.1016/j.socscimed.2015.07.022>
- Carlson, V., Chilton, M. J., Corso, L. C., & Beitsch, L. M. (2015). Defining the Functions of Public Health Governance. *American Journal of Public Health*, 105(S2), S159-S166. DOI: <https://doi.org/10.2105/ajph.2014.302198>
- Costea, F., Țăran, A.-M., Lobont, O.-R., (2022), Scientific Contextualization of the Public Policy and Entrepreneurship Nexus, "Ovidius" University Annals, Economic Sciences Series, 22(1), 844-853.
- Dima, B., Dima, S.M., Lobont, O.-R., (2013). New empirical evidence of the linkages between governance and economic output in the European Union. *Journal of Economic Policy Reform*, 16(1), 68-89. DOI: <https://doi.org/10.1080/17487870.2012.759427>
- Kalita A, Shinde S, Patel V., 2015. Public health research in India in the new millennium: a bibliometric analysis. *Global Health Action*, 14;8:27576. DOI: <http://doi.org/10.3402/gha.v8.27576>
- Lobont, O. R., Purcarița, R., Vatavu, S., & Costea, F. (2021). A Bibliometric Mapping of the Research Trends of Public Governance and Entrepreneurship Framework. *Postmodern Openings*, 12(1Sup1), 35-53. DOI: <https://doi.org/10.18662/po/12.1sup1/270>
- Lobont, O. R., Țăran, A. M., Costea, F. (2020). E-Government Research Still Matter? A Bibliometric Analysis. *Annals of Dunarea de Jos University of Galati. Fascicle I. Economics and Applied Informatics*, 26(2), 58-63. DOI: <https://doi.org/10.35219/ea15840409106>
- Marks, L., Cave, S., & Hunter, D. (2010). Public health governance: views of key stakeholders. *Public Health*, 124(1), 55-59. DOI: <https://doi.org/10.1016/j.puhe.2009.11.006>
- Ravšelj, D., Umek, L., Todorovski, L., & Aristovnik, A. (2022). A Review of Digital Era Governance Research in the First Two Decades: A Bibliometric Study. *Future Internet*, 14(5), 126. DOI: <https://doi.org/10.3390/fi14050126>
- Rodríguez-Soler, R., Uribe-Toril, J., & de Pablo Valenciano, J. (2020). Worldwide trends in the scientific production on rural depopulation, a bibliometric analysis using bibliometrix R-tool. *Land Use Policy*, 97, 104787. DOI: <https://doi.org/10.1016/j.landusepol.2020.104787>

- Țăran, A-M., Mustea, L., Vătavu, S., Lobonț, O-R., Luca, M-M. (2022). Challenges and Drawbacks of the EU Medical System Generated by the COVID-19 Pandemic in the Field of Health Systems' Digitalization. *International Journal of Environmental Research and Public Health*, 19(9), 4950. DOI: <https://doi.org/10.3390/ijerph19094950>
- Waltman, L. (2016). A review of the literature on citation impact indicators. *Journal of Informetrics*, 10(2), 365–391. DOI: <https://doi.org/10.1016/j.joi.2016.02.007>
- Yang, K. & Qi, H. (2022). The Public Health Governance of the COVID-19 Pandemic: A Bibliometric Analysis. *Healthcare*, 10, 299. DOI: <https://doi.org/10.3390/healthcare10020299>